

March 28, 2005

MEMORANDUM

TO: Charles W. Ariss, P.E.
Engineering Manager, Boise Regional Office

FROM: Paul Wakagawa P.E.,
Technical Engineer

SUBJECT: **Food By-product Management, LLC Permit Modification "C"**
Staff Analysis for Inclusion of Meadow Gold Whey, LA-000191-01
(Industrial Wastewater)

PURPOSE

The purpose of this memorandum is to satisfy the requirements of IDAPA 58.01.17.700.02 for issuing a major modification to wastewater-land application permit LA-000191-01.

GENERAL DESCRIPTION

Food By-product Management, Limited Liability Company (FBM) operates an existing wastewater land application facility located approximately 5 miles east of Murphy. FBM applies cheese processing wastewater (wash water and sludge) and lactose produced at the Sorrento Lactalis cheese factory located in Nampa, Idaho to a site consisting of approximately 1,444 acres of irrigated or fallow farmland. See Figure 1.

This permit modification addresses the delivery of another wastewater stream from Meadow Gold Dairies plant located in Boise to be delivered by truck to the FBM site.

SUMMARY OF EVENTS

Wastewater land application permit (WLAP) LA-000191-01 was issued on October 21, 2003. Minor modifications were issued on April 19, 2004 and July 26, 2004 to include additional fields to permit.

FBM submitted application materials to include wastewater generated at Meadow Gold Dairies in July 2004. Plans and specifications for facilities to offload the Meadow Gold Dairies into the FBM system were approved in December 2004. Construction of the facilities was completed in March 2005.

In August 2004, DEQ issued temporary approval to land apply wastewater from Meadow Gold Dairies at the FBM site by truck application. This permit modification will provide final approval for land application of Meadow Gold Dairies wastewater at the FBM site.

SITE CHARACTERIZATION

Site characterization is provided in the staff analysis for the original permit and is not included in this analysis.

DESCRIPTION OF WASTEWATER LAND APPLICATION SYSTEM

Cheese processing wastewater (wash water and sludge or filter reject) and lactose from the Sorrento Lactalis cheese plant is delivered by truck to the land application site. The wash water and sludge is offloaded from trucks into a storage pond with approximately 750,000 gallon of capacity.

In the 2004 application year (November 1, 2003 to October 31, 2004), 156.8 million gallons of wash water and 2.36 million gallons of sludge from Sorrento Lactalis were land applied at the site. In addition, approximately 12,000 gallons per day of Meadow Gold Dairies whey was truck applied beginning in starting in August 2004.

The original permit contained a compliance activity to provide an additional storage capacity for periods of time when land application is not allowed (extreme cold conditions, during heavy precipitation, snow melt conditions, crop harvest, etc...). FBM submitted justification to eliminate the requirement for additional storage capacity in October 2004. Justification included:

- actual operation did not require additional storage in the winter season in 2003 and 2004,
- cold weather kits have been used on pivots 6 and 8 to allow operation in extreme cold conditions, and
- the warm temperature and rapid turnover of the wastewater in the storage pond prevent freezing problems,

In addition, Sorrento Lactalis is currently constructing a wastewater treatment plant that will reduce the volume of wastewater that will be delivered to the FBM site from approximately 500,000 gallons per day to around 40,000 gpd, which includes the Meadow Gold wastewater. The wastewater treatment facility is expected to be in service late 2005 or early 2006.

The lactose stream is handled separately from the wash water and sludge. Due to the high strength of the lactose, it is applied on fallow fields and used to grow crops the following year. The lactose is applied by truck to dedicated field(s). Approximately 700,000 gallons of lactose (1.900 gallon per day) was applied in 2004.

WASTEWATER QUALITY AND LOADING RATES

The following table shows the projected loading rates, including the Meadow Gold Dairies wastewater. Projections are based on the 2004 application volumes of Sorrento waste streams and 18,000 gallons per day of wastewater from Meadow Gold Dairies.

Stream	Quantity, gallons/day	COD lbs/day	Nitrogen lbs/day	Phosphorus lbs/day	NVDS lbs/day
Sorrento Lactalis Wash Water & Sludge	457,000	4,707,664	135,359	49,803	2,481,818
Sorrento Lactose	2,000	1,354,625	6,198	9,741	99,299
Meadow Gold whey	18,000	3,146,096	61,588	16,310	365,310
Total:		9,208,384	203,145	87,380	2,946,427

The projected cropping plan for 2005 is 309 acres in alfalfa and 503 acres in wheat for a total of 812 acres being cropped. The average constituent loading rate using the values from the previous table and 812 acres is shown in the following table:

Constituent	Loading Rate, pounds/acre	Loading Rate, pounds/acre-day
Chemical Oxygen Demand	11,340	31.1
Nitrogen	250	
Phosphorus	108	
Non-volatile Dissolved Solids	3,629	

The above loading rates assume all of the various streams are evenly applied across 812 acres. These figures do not reflect actual operations since the lactose stream is segregated and truck applied to certain fields. The mixed stream consisting of Sorrento Lactalis wash water and sludge and Meadow Gold whey is applied via sprinkler systems on other fields. However, these figures provide a general picture of the expected loading rates.

The site appears to be adequately sized to land treat the wastewater volume with the Meadow Gold wastewater.

Tables 1 through 3, attached, provide details on wastewater quantity and quality.

RECOMMENDATION

DEQ staff recommends that the draft permit modification be issued. The projected loading rates with the addition of the Meadow Gold waste stream are in compliance with the existing permit limits and requirements.

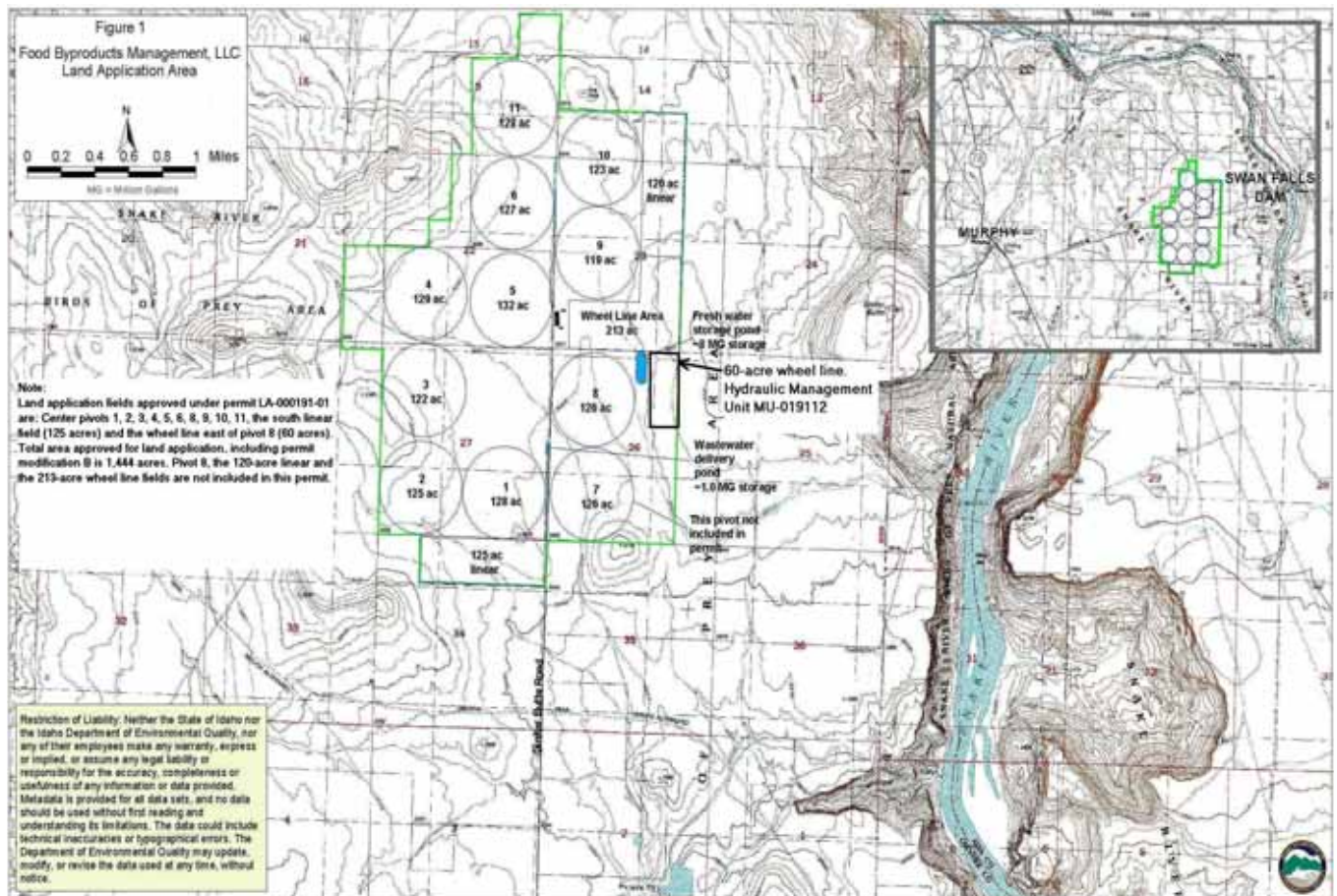


Table 1**Food Byproduct Management, LLC****Revised Operation with Meadow Gold Whey****Projected Loading Rates with Sorrento wash water, Sorrento sludge, Sorrento lactose, and Meadow Gold whey****Basis**

1. Sorrento Lactalis wash water, Sorrento sludge, and Meadow Gold whey is mixed in the storage pond and applied as one stream
2. Sorrento Lactalis lactose is truck applied on a field dedicated for lactose only
3. Use 2004 wastewater quality from annual report
4. Assume 450,000 gpd wash water, 7,000 gpd sludge, 18,000 gpd Meadow Gold whey, and 2,000 gpd lactose
5. 812 acres planned for cropping in 2005

Total constituent loading rate from all waste streams

	Quantity	COD	COD	COD	Nit.	Nit.	Nit.	Phos.	Phos.	Phos.	NVDS	NVDS	NVDS
	gpd	mg/l	lbs/day	lbs/year	mg/l	lbs/day	lbs/year	mg/l	lbs/day	lbs/year	mg/l	lbs/day	lbs/year
Mixed wash water and sludge	457,000	3,384	12,898	4,707,664	97	371	135,359	36	136	49,803	1,784	6,800	2,481,818
Lactose	2,000	222,500	3,711	1,354,625	1,018	17	6,198	1,600	27	9,741	16,310	272	99,299
Meadow Gold whey stream	18,000	57,417	8,619	3,146,096	1,124	169	61,588	508	76	27,835	6,667	1,001	365,310
Total			25,228	9,208,384			203,145			87,380			2,946,427

Loading Rates assuming even application on 812 acres

COD	31.1	pounds/acre-day
NVDS	3,629	pounds/acre
Nitrogen	250	pounds/acre
Phosphorous	108	pounds/acre

Table 2
Food Byproduct Management, LLC
Washwater and Sludge applied in 2004 reporting year

Month	Washwater, gallons	Washwater, gallons/day	Sludge, gallons	Sludge, gallons/day
Nov-03	17,703,800	590,127	297,889	9,930
Dec-03	13,782,420	444,594	205,320	6,623
Jan-04	13,112,980	422,999	192,778	6,219
Feb-04	10,241,520	353,156	154,576	5,330
Mar-04	13,432,400	433,303	275,894	8,900
Apr-04	12,994,410	433,147	238,359	7,945
May-04	13,952,860	450,092	121,734	3,927
Jun-04	13,962,791	465,426	142,935	4,764
Jul-04	15,509,980	500,322	154,138	4,972
Aug-04	13,396,680	432,151	171,463	5,531
Sep-04	9,045,390	301,513	170,728	5,691
Oct-04	9,661,690	311,667	236,737	7,637
Total	156,796,921	428,407	2,362,551	6,455

Table 3
Food Byproduct Management, LLC
Lactose applied in 2004 reporting year

Month	Lactose, gallons	Lactose, gallons/day
Nov-03	0	0
Dec-03	0	0
Jan-04	0	0
Feb-04	43,046	1,484
Mar-04	0	0
Apr-04	0	0
May-04	66,055	2,131
Jun-04	81,231	2,708
Jul-04	246,002	7,936
Aug-04	270,769	8,734
Sep-04	0	0
Oct-04	0	0
Total	707,104	1,932